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# Melbourne Botanic and Domain Gardens, Victoria.

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## ANNUAL REPORT

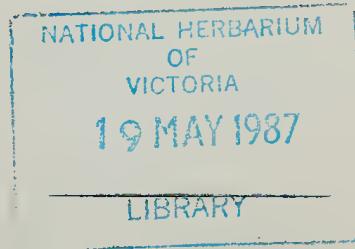
ON THE

# MELBOURNE BOTANIC GARDENS,

GOVERNMENT HOUSE GROUNDS AND DOMAIN.

BY

W. R. GUILFOYLE, F.L.S., C.M.R.B.S., LONDON,  
DIRECTOR.



MELBOURNE :

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## ANNUAL REPORT

OF THE DIRECTOR OF THE

# BOTANIC AND DOMAIN GARDENS, MELBOURNE.

TO THE HONORABLE DUNCAN GILLIES, M.P., MINISTER OF LANDS  
AND AGRICULTURE, ETC., ETC., ETC.

SIR,

In submitting my third annual report on the Melbourne Botanic and Domain Gardens, I have to state that the portion of the Botanical Gardens which I selected as the most fitting spot for commencing the re-modelling of the whole grounds, has been completed.

As mentioned in my previous reports the portion chosen was the area surrounding the Director's house. My principal reason for this selection was that in consequence of its situation, it could be more effectively watched than remote parts of the grounds thus enabling me to plant out many very valuable and rare shrubs, which it would have been found difficult to replace, in the event of injury or spoliation. The piece of land selected was also adapted for giving when completed, some indication of the nature of the effects to be produced, and this became the more necessary because the work of transformation going on in the Gardens will occupy a considerable time; a fact which will be readily perceived when I mention that the Melbourne Botanic Gardens extend over an area almost equal to those of the Botanic Gardens of Sydney, Adelaide and Brisbane combined.

One of the principal features in my original design was the creation throughout the Gardens of spacious lawns, in some cases occupying places where formal and narrow walks existed; thus giving to suitable places a Park-like appearance, and affording a bright and elastic turf, over which the visitors could roam at pleasure. In accordance with this plan, about 3,500 yards of walks have been obliterated; while 2,600 yards of curvilinear walks have been made in the Botanic Gardens. While the introduction of broad lawns give infinite beauty to the landscape, it also renders easy the task of keeping the area so treated in good order. The

new lawns which have been formed in the Botanic Gardens are kept in thorough order by a one-horse machine, attended by one man; and the work is efficiently done in this manner, whereas a garden cut up with innumerable straight paths, with narrow borders and mean edgings requires continual attention, and a far greater amount of labor. To obviate this as far as possible, I have adopted the system of broad grass edgings, which maintain a regular, smooth appearance, at a minimum cost of labor. The high opinions I expressed in my two previous annual reports respecting the Buffalo grass as being a splendid grass for lawns, has been practically demonstrated in these Gardens. It is also a very valuable grass for resisting the encroachment of sand on the coast, besides possessing other admirable qualities. The "Cynodon dactylon" or Couch grass, may be advantageously mixed with it.

Trees numbering 682 and averaging in height from 7 to 35 feet were removed to the new lawns from the thickets bordering the old paths, and only five of the number died—an acacia, two Pittosporums, a *Pinus insignis*, and a *Grevillea robusta*—all of which are plentifully represented in the Gardens. The trees thus removed are doing well, and successfully withstood the two months' excessively hot weather at the close of the summer.

A lawn of several acres in extent, planted with Buffalo grass, has been formed on a space sloping down to the Botanic Gardens lake. It includes portions formerly occupied by the emu pens and monkey cages, and a part divided into segments by eight walks, three of which were parallel a few yards from each other. The rubbish yard and sheds formerly existing in this spot have been destroyed and the hedge of *Pittosporum undulatum* together with the thickets of *Buddleia* removed. The lawn has been grouped with plants of sub-tropical character, and the space affords pleasant glimpses of the lake. The temporary iron fence mentioned in my last report was removed as soon as the grass had properly covered the lawn, which now presents a beautifully even and verdant appearance. Many of the trees removed to this part of the Gardens are fully 25 feet high. In the months of May and June last a number of Palms were lifted consisting of "Chamaerops excelsa," and "humilis," "Corypha Australis," "Phoenix sylvestris," "Phoenix dactylifera," "Phoenix spinosa," "Areca sapida," "Latania Borbonica," and others, together with some *Zamias*, *Cycas*, and *Encephalartos*. They were placed in suitable positions in the groups which now adorn this lawn, and without exception they have thriven remarkably well. Seventy fine *Cycas* of the species "media" and "Normanbyana" of

Queensland, were purchased from Mr. Fitzallan (Botanical Collector at Bowen) and all have done well. Many of them which were planted upon the Buffalo grass lawn, are great acquisitions to the scenery, some being dispersed singly while others are grouped with *Zamia spiralis* or plants of similar character. The Palms, Cycads, Bamboos, Pampas grass, *Arundo*, *Yuccas*, *Agaves*, *Cordylines*, *Dracænas*, &c., which have also been planted singly and in groups on this lawn, give a general tropical effect, creating a variety of striking views from different points of observation. Two large specimens of *Jubæa spectabilis* (a hardy palm of great beauty) were brought from the grounds of the late Hon. M. O'Grady and planted on this lawn. Top-dressing was found necessary during the summer on account of the hard, clayey nature of the soil, especially in those places where the former pathways led down to the lake, and across the spot where the fern gully now exists. A rustic summer house with thatched roof has been erected near the rockery. The wood of which this house is built was obtained from the wattle scrub on the Yarra bank. It presents a neat and appropriate appearance, and will be supplied with water for drinking purposes—a matter which requires attention throughout the Gardens, before the summer sets in. At the bridge crossing the lagoon a tap and ladle have been temporarily placed, supplied with drinking water, by a syphon from one of the tanks of rain water at the Director's house. A collection of *Abies* has been planted upon the new and extensive lawn near the Palm house. There were already in this spot near to the avenues of Poplar, Cypress, and Pines (which have been removed) well grown specimens of *Abies Nordmaniana*, *Menziesi*, *excelsa*, and *Jezoensis*; and the following were added during the past year:—*Abies pindron*, *Cilicica*, *Smithiana* (two fine specimens of the latter, over 8 feet in height, brought from the grounds of the late Hon. M. O'Grady), *Abies orientalis*, *Abies rubra* and *Frazeri*. I hope to be able to add to the Gardens collection during the ensuing year by purchasing from the nurseries of Messrs. Brunning, Lang, Harris, Taylor and Sangster, Cole, and other Victorian nurserymen and seed merchants, plants which are not at present represented in the Gardens. During the past three years (as will be seen from my previous reports) many hundreds of valuable plants have been added from their collections, which were not to be found in the grounds when I took office, though many of them had long been known in some of the private gardens of Melbourne. That a full collection of native plants, should exist in the Botanic Gardens there is no doubt; and there should also be as complete a collection of exotics as it is possible to procure. The

Palm House Lawn has been top-dressed with good soil, and a fine even sward has been made. Some bedding out has also been done near the Palm House; but it is merely of a temporary character. The display of flowers, though gratifying to visitors is not exactly in a suitable position, and will be made elsewhere as the laying out of the Gardens progresses, and proper ground is prepared for the purpose.

Of course in lawn making it is always advisable to first of all thoroughly drain the place. If the lawn is an extensive one, and trenching is considered too expensive, the ground should be sub-soil ploughed, harrowed, levelled, raked, and thickly sown with the mixed lawn grasses usually sold by the nurserymen here, a little clover being added; and in the spring, the spade should be stuck in at regular distances, and rooted pieces of the Buffalo and Doub grasses (*Stenotaphrum glabrum* and *Cynodon dactylon*) planted. These after a short time will meet, giving, with the English grasses, both a summer and a winter lawn. In summer the Buffalo and Doub grasses are sure to be green. If the soil is naturally poor, top-dressing after the first year with street sweepings, mixed with a sandy soil or friable loam, will be found of value in increasing the strength of the sward. The correctness of this theory I have practically demonstrated, as may be seen in the Gardens at the present time. One lawn only was formed entirely of Buffalo grass; but to neutralise its rather brown tint during severe frosts, I had it top-dressed and scattered over it a slight sowing of the English mixture of lawn grass seeds.

I may here point out that a place laid out in the form which I am giving to the Botanic Gardens will be easily kept in order after a year or two. Grass lawns can be mown by a machine. The three large lawns lately made in the Gardens, as I have previously stated can be attended to and kept in order by the labor of one man and a horse; and they could go over a much greater space in a week; whereas numerous borders of flowers, with walks occupying the same space, would necessitate a vast amount of labor and expense. Nor can anything in the way of extensive gardening be more beautiful than a succession of verdant lawns, broken by graceful groups of diversified foliage and effectively arranged floral bloom. Even the highest and most important feature in a Botanic Garden—the collection and scientific arrangement of plants—can be advantageously carried out in this manner, thus combining the useful with the ornamental, and gratifying the taste of lovers of the picturesque and beautiful, while facilitating the researches of the botanical student.

Drainage with stones (known as French drainage) is far more effective in some places than pipes ; and I have adopted the former in portions of the piece newly added to the Gardens. Drainage of ground in general is very necessary for the proper cultivation of plants. Since the Botanic Garden was drained, nearly two years ago, there has been a vast improvement in the growth of trees. Though some of the trees had been struggling for existence for upwards of seventeen years they have since made rapid progress. In the French drainage stones are put on end, and built up two feet in the trench, and this is by far the best system to adopt in swampy ground, as the moisture percolates through and keeps the ground free from stagnant water. This has been exemplified in the Garden around the Director's house.

The white gravel formerly in use for paths in the Botanical Gardens was objectionable, not only from its glare, but from the fact of its remaining disintegrated and absorbing much water during wet weather, thus becoming sloppy and heavy. With the view of remedying this defect, I endeavoured to discover a gravel bed in the Gardens which might be utilised in forming the new paths ; and after three attempts in sinking holes for this purpose, fortunately discovered a bed of fine orange colored gravel, which has been freely used in constructing the new walks in the Gardens. This gravel, after a time becomes hard as cement, and makes a firm dry footway, while its color harmonises most agreeably with the surrounding vegetation.

The Lake in the Botanical Gardens has been kept thoroughly clear of weeds by the T-shaped machine, armed with scythe-blades, which I designed, and which was described in my last annual report. The clear sheet of water now takes its proper place as one of the salient points in the landscape ; and when the remodelling of the Gardens is complete, will prove a most important and attractive feature in the views to be obtained from various points. During the intensely hot weather, when the lake was nearly dry, advantage was taken of the opportunity to obtain a large quantity of manure from it, for general use in the Gardens. The bottom of this lake contains a deposit of rich manure, decayed vegetation having been continually conveyed into it, down the slopes, which are drained by it ; and it would be very advisable on a fitting occasion, to deepen the lake, when enough soil of a rich description would be obtained to heighten the low ground at its head. Rhododendrons, Magnolias, Azaleas, &c., would look well on the islands which stud this lake ; and it is my intention to plant a few there this season. Several specimens of the gorgeous scarlet flowering *Eucalyptus Ficifolia*,

kindly furnished me by Mr. George Brunning (of the St. Kilda nurseries), have been planted thereon; and their wealth of fiery bloom will after a few years afford a grand display. This magnificent plant from Broken Inlet, Western Australia, produces its flowers at a much earlier stage of growth than any other species of the genus with which I am acquainted; and its bloom resembles a ball of fire more than anything else to which I could compare it. I have seen the Flame Tree of Illawarra, Northern New South Wales and Queensland; and the brilliant scarlet masses of the *Erythrina laurifolia* growing upon the banks of the Rewa river in Fiji; but they do not surpass the effect produced by the floral display of this Eucalyptus when in bloom. Another tree not to be excelled for the grandeur and wealth of its bloom is the "*Jacaranda mimosæfolia*," or Rose-wood of Brazil, which I also propose to plant on the lake islands. This tree, judging from the progress made by small specimens now in the Botanic Gardens will succeed here quite as well as in the Sydney Botanic Gardens, where a specimen over 20 feet in height is the great attraction in the flowering season. Its foliage of a fern-like appearance, is exquisitely graceful; and even when divested of flowers the feathery umbrageous branches render it a strikingly beautiful specimen of arboriculture; while in the blooming season, the blossoms of a delicate blue, are so abundant as to completely cover the tree, making it, from a distance, appear one mass of cerulean flowers. These two trees, with Rhododendrons and other plants introduced to vary the monotony of the Pampas grass, will render the latter, conspicuous spots in the landscape, introducing that warmth of coloring so necessary to the finish of a perfect picture.

The swans and wild fowl are doing well. Of the cygnets hatched last year, two only remain, one having been shot by some evil disposed person. The swans caused much trouble during the summer season, by going over the bank into the Yarra, travelling miles up the river; now, however, that the iron boundary fence of the Gardens has been erected along the bank of the Yarra, the swans are shut in, while the Gardens are protected from the rough characters who usually infested them, especially on Sundays, coming up the river in boats and idling about on the bank. The remainder of the iron fence now supplies the place of a wooden one which divided from Anderson street the 30 acres recently added to the Gardens. The promontories which jut into the small lake, dividing it from the large one, and joined by a bridge, have been lengthened, heightened, and made broader, for the purpose of giving variety to the scenery from various parts of the grounds, especially from

the Buffalo grass lawn. This year I propose to remove the present bridge, which is not in keeping with the surroundings, and construct a rustic one in its stead, with one simple arch. An *Agonis flexuosa*, *Acmena pendula*, and some *Melaleucas* of large size, have been planted on either side of the bridge, so as to divide this embankment; which even now, appears monotonous by reason of its length. When the bridge alluded to is built, however, there will be a better opportunity to complete this portion of the lake scenery. In this, as in other projected improvements, I am compelled to regulate progress according to the money at my disposal.

The sloping bank to the lake where the experimental Garden now exists, and at present clothed from end to end with *Willows*, *Fraxinus*, *Ulmus*, *Aloes*, *Ricinus*, *Cypress*, *Pinus*, &c., &c., has straight paths running down to the lake. This part of the grounds could be transformed into a most picturesque spot, and various orders arranged in groups. The *Amaryllidæ* have been grouped near the band-stand, on the Palm house lawn; near this the *Liliaceæ* will be arranged a little lower down, and nearer again to the lake the *Iridaceæ*. The *Liliaceæ*, *Cordylines*, *Dracænas* and *Yuccas*, will be beautiful objects with *Ripogonums*, and other climbing plants of the tribe, planted at their stems. They would tower far above the *Aloes*, *Phormium* (or *New Zealand flax*), *Ruscus*, *Arthropodium*, *Astelia*, *Dianella*, *Ornithogalum* and *Hyacinth*, &c., &c., and altogether form an interesting collection for the student of botany. The tea-tree scrub at the head of the lake should not be altogether destroyed, but it might be much improved as I have pointed out in my last annual report. At present it is a swamp, quite impassable for visitors in winter time. It might be raised with good soil to be obtained from the bottom of the lake. The scrub could be so thinned out as to form glades and vistas, opening on lawns of grass, upon which groups could be formed, of the order *Ericaceæ*. In this of course would be included the *Ericas* themselves, an abundant supply of which, can be obtained from Victorian nursery-men. The varieties of *Rhododendron*, *Arbutus*, *Kalmia*, *Azalea*, *Andromeda* and a variety of others belonging to the same order would be placed here. The *Magnoliaceæ* too, of which we have already so many representatives, and the *Hydrangeas* with their gorgeous blue and pink flowers, would also grow well in such a situation. A variety of foliage could be created here, such as could not under any circumstances be grown in any other part of the grounds with the same success. *Palms* would also succeed; the masses of tea-tree affording

them shelter. The slope above the lake is naturally fitted for producing one of the grandest scenes in the grounds. At present it is one of the most painful to an artistic eye, as it is planted with stiff formal rows of trees seven or eight in number, a line of *Araucaria excelsa* being followed by an avenue of *Pinus halepensis*, succeeded by another row of *Araucaria excelsa*; then a line of *Araucaria Cunninghamii*, backed by yet another of *Araucaria Bidwilli*; the whole presenting a monotonous appearance. This extensive space with which I propose to deal, when time and means will allow, can be converted into a picturesque and scientifically valuable pinetum, thus fulfilling one of the botanical classifications which I invariably keep steadily in view. The lines of trees alluded to, though the specimens are of considerable size, can be successfully removed to other portions of the grounds; and I may here point out, that the lifting and removal of large trees, which have been freely carried out by me, fulfil a twofold purpose, by clearing the ground where the trees occupied an incongruous position, for future operations, and by at once producing the intended effect in the spots to which they are conveyed. As stated in a former report, the band-stand should be near the water. I would suggest that it be placed when opportunity offers, at the upper portion of the lake, near the Melaleuca scrub. The Italian Consul has been kind enough to send home for plans of a suitable stand. In this portion of the Gardens, as before stated, the orders *Magnoliaceæ* and *Ericaceæ* would thrive well and form appropriate planting for this spot.

The proper drainage, and reticulation of the water supply from the Yarra, is a most important matter, not only with respect to Government House grounds, but the Botanic Gardens also. The poor character of the soil in many places necessitates it. The banks of the new Reservoir in the Botanic Gardens (which has been estimated to be capable of supplying 250,000 gallons twice a day) have been planted with Buffalo grass. This reservoir will be of very great service; it will be kept filled by an engine of great power substituted for the 6 h.p. one at present in use. In seasons of drought its value will be immense. The engine will draw the supply from the Yarra, the water of which is, however, only fit for gardening purposes, there being no supply of Yan Yean in the place, the latter having been cut off before I took office. The residents in the Gardens occasionally contrive to secure a little rain water from their houses; but when that fails, they are forced to use the polluted water from the Yarra. In such extensive Gardens, the resort of thousands, especially during the summer season, there should be an

abundant supply of drinking water for visitors; and I trust that some provision will be made before the summer sets in to supply this great want, as also to provide drinking fountains throughout the grounds. A few rustic seats round large trees on the lawns and elsewhere, have been provided during the past year under my directions, and these should be materially added to. The overflow from the new Reservoir can be utilised in supplying small lakes below it. This portion of the Gardens when completed will prove a very striking spot. The contract for a portion of the new Conservatory has been commenced. The old one is in such a dilapidated condition, that it would not be a surprising matter to find it blown down some windy night. The woodwork is thoroughly rotten, and the finger can be pushed through portions of it. Two large Norfolk Island pines 20 feet in height have been planted at one of the entrance gates facing the South Yarra drive, and are thriving.

Three broad walks have been formed through the newly added portion of the Botanic Gardens (30 acres) for the convenience of visitors from the Domain Road, Millswyn street, and Park street. Persons wishing to reach Richmond from Melbourne at night, can now do so without entering the Gardens, by following the roadway *via* Brander's Ferry along the Yarra as far as the Botanical Bridge and Anderson street. Another entrance has been made from Anderson street, near the new Reservoir. Four vases have been placed at the corners of walks in the Gardens which have been filled with Cacti and other appropriate plants. Near this spot I intend to arrange the following orders, in groups, giving each plant sufficient room to grow naturally and freely:—The orders *Scrophularineæ*, *Bignoniaceæ*, and *Verbenaceæ*, will occupy the corners; a circular bed in the middle of the triangle will contain *Acanthaceæ*; while at the marginal piece near the reservoir will be planted *Myoporineæ*, *Labiateæ*, *Jasmineæ*, *Solaneæ*, and *Convolvulaceæ*—all interesting. As I find there are many genera of these orders hidden away in some of the thickets in the upper part of the Gardens, near to Anderson street, where they cannot be seen by visitors, they will be removed to some of the beds in question, where they can be seen to advantage. At the entrance to the South Yarra drive, opposite Park street, three other most interesting orders will be grouped. In the centre I propose to place that truly beautiful class the *Malvaceæ*, and close to it the *Liliaceæ* and *Sterculiaceæ*. The Zamias purchased from Mr. Fitzalen (a botanical collector of Bowen, Queensland) have thriven; and it will be desirable to introduce many of such tropical plants. The *Encephalartos Altenstenii* and *E. lanuginosa* from Africa have also done well; there was an absence of such ornamental plants in the Gardens.

In the triangular piece formed by the entrance from Anderson street, a natural system of plants will be commenced at once. With respect to the entrances to the Gardens generally it would be a great improvement to remove the present unsightly gardeners' residences scattered throughout the grounds, and substitute lodges at the various entrances.

The Fern Gully in the Botanic Gardens is now one of the great attractions in the grounds and it has quite fulfilled the expectations I expressed concerning it in my first report. The large ferns have flourished, and now spread their cool green fronds over the small species growing beneath their shade. The aspect of the place is quite a natural one, as it should be; and while the shelter trees transplanted there, afford the requisite shade, it has been freely planted with stag-horn and elk-horn ferns, which give increased beauty and appropriateness to the spot. A number of tall tree ferns from Mount Macedon have been planted here, and are growing vigorously. I am indebted to Walter Hill, Esq., Director of the Brisbane Botanic Gardens, and Lewis A. Bernays, Esq., F.L.S. of the Brisbane Acclimatisation Society, for some valuable ferns which were very scarcely represented in the Melbourne Gardens. From these gentlemen I received specimens of the *Platycerums* and *Birdsnest Asplenium*, &c., with which the stems of the tree ferns—*Alsophilas*, *Cyatheas* and *Dicksonias*—and many of the shade trees, were clothed, forming capitals to the columns of the trunks and relieving the dull hue of the stems with their pale green. Scores of large trees redundant and useless in other portions of the grounds, were transplanted to this Fern Gully (over 200 specimens) for the protection of the ferns. Climbers have also been extensively planted—*Banksian* and *Cloth of Gold Roses*, *Loniceras*, *Ipomæas*, *Bignonias*, *Solanum Jasminoides*, *Mandevillea*, climbing *Pelargonium*, &c., &c.—were placed at the stems of trees; and these will ere long, supplemented by the umbrageous trees, afford a canopy of shade. Amongst the trees are fine specimens of *Almus*, *Grevillea robusta*, *Dammara robusta*, *Robinia*, *Buddleia*, *Brachychiton populneum*, *Brachychiton acerifolium*, all of which are thriving. A tall tree fern 40 feet high and quite a novelty has been planted here. It is I believe an undescribed species, but is probably a *Cyathea*. This fine specimen was obtained in the Cape Otway forest, a month or two ago, and transported to the Gardens. If it lives, it will be a great acquisition to the Fern Gully. The bridge which formerly crossed the gully, and which was not only unsightly, but in a state of decay, and dangerous to visitors, has been removed. In my last annual report, I mentioned the removal of the aviaries from this spot, and the filling up of a waterhole, near them. The

whole of this part is now included in the Fern Gully. Many of the trees formerly growing in the spaces now occupied by the new lawns were removed to this gully. The walk replacing the bridge now dips into the hollow, affording a good view of the Fern Gully, with a back ground at the lower end of the islands in the lake. The overflow from the new reservoir may be here used most effectively in the creation of a trickling stream winding over the rocky boulder strewn bed of the gully. The sight and sound of such a stream would be in harmony with the surroundings, and add to the natural appearance of the spot. A rockery has been made on the Buffalo grass lawn near the gully. The ferns, both large and small, have developed luxuriant fronds, and in summer time, the cool, sequestered shade of the spot is generally appreciated. It was suggested, when the gully was in process of formation, that the ferns would fail before the trees planted could afford the top shade, but I am happy to say these prognostications have proved worthless, the matter being successfully accomplished during the second season for transplanting since my appointment. The fern gullies of Victoria should be imitated in these Gardens, as opportunity allows. In these, more than anything else, the highest order of beauty is in the natural aspect given. Many cartloads of stones have been brought from the grounds of the Kew Asylum, for making rockeries, &c., in the Botanical Gardens.

The number of visitors to the Gardens during the past year has been exceedingly great. The "Southern District" brass band performs every alternate Saturday in the grounds, in fine weather. It is gratifying to find that the Gardens are so extensively visited by the public, and that the lawns and other improvements made, are generally appreciated.

During the past season, a good display of flowers was kept up throughout the Botanic Gardens until the drought set in. In my opinion flower gardening in such an extensive place should be concentrated in certain spots; for nothing is gained in effect by scattering flowering annuals and herbaceous plants indiscriminately throughout a large garden. A corner of flowers here, or a bedding out there, can be watched; but flowers everywhere amongst trees and shrubs become monotonous, and are out of place in those portions set apart for showing the various species of different orders of plants, an arrangement which must receive strict attention in any Botanic Gardens. I am most anxious to form a good Rosery in these Gardens. Though there are some magnificent collections of the "Queen of Flowers" around Melbourne, I have not seen a Rosery on a thoroughly grand scale in the colonies; and the Melbourne Gardens should certainly not be deficient of this beautiful

feature. I have already secured a superb collection of Camellias, which are doing exceedingly well. I have also a fine collection of Azaleas, but *Rhododendrons* and *Roses* are very deficient. The former will be required amongst other things, for planting on the islands in the lake, while the necessity for a Rosery is at once apparent. Properly formed, such a feature in the Gardens would be one of surpassing interest, and would alone afford immense gratification to the public during the season when these beautiful flowers are in bloom, while the contrast of color by effective grouping, would create magnificently harmonious and pleasing nature-pictures. The Rosery would naturally require much time and outlay, but a beginning should be made, immediately when funds are available for the purpose. Flower stealing I regret to say, has this year been more prevalent than ever. Persons of both sexes are equal culprits; indeed it would be difficult to say which are the worse offenders. Men and boys generally convey the stolen goods to their pockets; women use their parasols, if they have them, or coolly carry them about in their hands. It is of course a very unpleasant duty to check this pilfering, but unless some check is adopted, the Gardens would be almost denuded of flowers and plants. The rule of preventing people from bringing flowers into the Gardens which is adopted in other public gardens is a good one, though I have heard that it has been sometimes carried to excess by the watchmen employed on Sunday duty. Persons who bring loose dogs into the Gardens, against the rules, invariably disown them. Trivial excuses are made, if the watchmen remonstrate, or threaten to destroy the animals, such as that "they are quiet," "belong to a friend," "and must have followed," and so on. Dogs, whether quiet or not, occasion much mischief in a garden. When in Queensland and New South Wales last December, I obtained numerous plants for the Gardens; some I purchased, but many were given to me as donations, and they were well worth the cost of the freight paid to convey them to Melbourne. It is true that some of them were already represented in the Gardens, but I saw no reason for rejecting fine specimens on that account. In the Botanic Gardens of Sydney and Brisbane I had the pleasure of inspecting superb collections of Palms and Cycads; and felt great regret that the Melbourne Botanic Gardens were so deficient of them. No tribe of plants equals these in adding grace and beauty to the landscape, when scenery of a tropical character is desirable, and what can be more beautiful? I am anxious to form some views of this kind in various parts of the grounds.

A guide to the Botanic Gardens will be needed when they are remodelled; and this is a work at which, in connection with a Catalogue

of its contents, I have for a considerable time with one of my assistants worked hard. The evening is the only time that I can devote to it. The Catalogue will contain a common English name for every plant, the compilation of such a book is necessarily an arduous task. When finished, however, it will be, I believe, the first work of the kind issued in the colonies. It will comprise scientific names with synonyms; the order to which each plant belongs, its uses, height, time of flowering, suitability for certain soils and situations, native country, &c.; a plan of the Gardens, a Calendar of the seasons, and a complete list of the orders of plants *represented* and *unrepresented* in the Gardens. Now that 30 acres (which should be drained) have been added to the Gardens, there will be ample space to carry out my idea of forming around the margin of the Gardens, Arboretums of the trees of Europe, Asia, Africa, America, and Australasia. I suggested this in my last report, and forwarded a plan; and hope soon to be in a position to carry it out. The distribution of the various orders in classified groups throughout the grounds is another work which I have commenced by forming a bed of the *Amaryllideæ*.

Remodelling a Garden is by no means an easy task, when—as in this case—it is of more than 20 years' standing. It can easily be understood that the formation of an entirely new one, would be far less difficult. The removal of large trees; and the appropriate blending in groups with smaller ones, of others which cannot possibly be removed on account of their size (though I have succeeded in lifting some of 40 feet in height) are matters requiring much forethought and deliberation. Yet I have no hesitation in asserting, that if the necessary means are placed at my disposal, the Melbourne Botanic Gardens can be made one of the most attractive and beautiful Public Gardens in the colonies. As I have previously mentioned the area is nearly as large as the Gardens of Sydney, Adelaide, and Brisbane put together; and though much remains to be done before the Melbourne Gardens can claim to be half as beautiful as these, the grounds have great natural advantages—undulating surface, hills and dales, lakes in their centre, and fine views of Hobson's Bay and the ocean. A liberal expenditure for a few years would make them unsurpassed by any gardens in the Southern Hemisphere. And while picturesque effect is created, the primary object of a Botanical Garden—namely; the proper botanical classification and distribution of plants—can be thoroughly carried out. Indeed, it is far better to group the various orders of plants, large and small, throughout the Gardens in such a manner, as to aid in producing a pleasant landscape (even in a botanical sense) than to huddle all the orders together.

Then of course it is to be considered that the scenery must harmonise as a whole. The old System ground on the eastern slope of the Gardens is a great eyesore, it is not by any means complete as far as the number of orders of plants to be found in the grounds is concerned. In some beds as many as nine orders are mixed up together, generally tending only to confuse the botanical student. The whole garden should be a *system* so to speak, and the various orders of plants so arranged as to prove not only picturesque, but instructive. Of course great care is necessary in pursuing this course, especially in representing the vegetation of the different zones. At every step the visitor should see something to remind him that he was in not only a Landscape, but also a Botanic Garden. Long borders of mixed flowers upon either side of footways I therefore wish to avoid, as much as possible; and now that well curved walks to the various gateways are nearly completed, rich swards of grass will form an agreeable substitute for needless pathways, crossing each other at right angles, or radiating from various centres.

The matter of supplying labels of trees, and shrubs, of an appropriate color, to replace the white ones now in use, is occupying my attention. They will bear a common English name for each plant, besides its botanical name, properties, &c., where of sufficient importance to render the latter necessary. There is a collection of plants of medicinal properties, which is continually being increased, and which will eventually be arranged in a suitable situation, for the convenience of those interested in such plants. A proper experimental Garden is much needed, and this also will receive attention as speedily as possible. The present one upon the bank of the lake is utterly unfit for the purpose. In this experimental Garden will be placed collections of fibre plants, gums and dyes, and those suitable for paper making, &c., &c. Many kinds of such preparations were forwarded (as stated in my last year's report) to the Philadelphia Exhibition. This year a still larger collection was sent to the Geelong Exhibition; and another to an Exhibition to be held at Amsterdam. The latter includes a collection of Polished Victorian Woods. Through the kindness of F. R. Kendall, Esq., Agent of the Peninsular and Oriental Mail Company, the collection for Amsterdam, was forwarded free of all charges for freight. With the Geelong and Amsterdam exhibits I forwarded descriptive catalogues, and with those for Amsterdam I also sent the appended essay on the fibres, &c. I also appended a descriptive Catalogue of Grasses in the Botanic Gardens, which affords valuable information on this important subject, and a copy of a letter to the Commissioners of the Melbourne Exhibition, also containing information respecting fibres, &c., shown at the exhibition.

## GOVERNMENT HOUSE GROUNDS AND DOMAIN.

The contract of Messrs. Walker and Halliday for the removal of the crest of the hill facing Government House, preparatory to the formation of the grand lawn, was an extensive piece of work, and the time necessarily taken in its execution, retarded planting operations in this quarter. Fortunately a bed of gravel was discovered during the necessary excavations, and the material has been utilised in the formation of paths, gravel for which would otherwise have cost a considerable sum. The contract has been completed in a most satisfactory manner and the lawn has been coated over again with the top-soil which however in some parts is of an inferior kind. It has been carefully ploughed, harrowed, levelled, and sown with English grass, and will be planted with the Buffalo and Doub grasses, which, in such a dry situation will materially assist in the formation of a good sward. When the contract for removing the hill was finished, I lost no time in preparing for the planting; some thousands of trees have been put in this season. The footpaths on either side of the drive to Government House are in my opinion a mistake. Considering that the curvature of the drive itself was not bold enough (as I reported last year) I ventured to alter it thirty yards south near the house. This was undoubtedly an improvement, but owing to the shortness of the drive, the said footpaths if allowed to remain will prevent my planting near enough to the margin to shut out a portion of the building from the Entrance Gate. The alteration of the width of the walk around the lawn known as the "pony drive" will as you suggested be carried out as speedily as possible. The curtailment of the gravel in front of the private and public entrances to Government House has according to your directions been altered.

In planting the approach to Government House, I think it will be more in keeping with the surroundings, and certainly far more picturesque, to form large groups of trees and shrubs between which glimpses are afforded of green expanses of grass and masses of trees rather than to make a formal avenue of any particular kind of tree. There is nothing natural in avenues. They may in some instances be useful, as for example in the Fitzroy Gardens, where they form thoroughfares for the convenience of the public; but along such a short drive as that which has been made through Government House grounds, such an avenue would in my opinion be quite out of place. I do not think that the alternate planting of Moreton Bay Figs with Cedrus deodara, or Elms with *Pinus insignis*, or *Wellingtonia gigantea* with

any of the kinds mentioned, would be suitable for the approach. An avenue may in some degree be useful in keeping off the sun's rays, but it is sometimes at the sacrifice of beautiful views given by openings through which the eye can freely glance over the landscape. A full grown hedge of Pittosporum crassifolium has been planted along the boundary of the croquet lawn. This will have the effect of secluding that part of the grounds, and the lawn being some feet higher than the orchard, a pretty view of the new lawn near the Botanic Gardens Palm house will be presented. The fountain court has been prepared with good soil, thoroughly levelled, and sown with lawn grass seeds. Many large trees have been transplanted to the grounds from the Botanic Gardens, all of which are doing well. The ferns in the gully are vigorously flourishing, and when I am enabled to give the natural appearance to the rockery here, the spot will be a very attractive one. The specimens of *Agonis*, &c., are also thriving, and fine specimens of *Grevillea*, *Brachychiton*, *Ailanthus*, &c., of large size, have been placed here from the Botanic Gardens, as a protection to the ferns.

I have stated in previous reports that in some places the soil of the Government House grounds is exceedingly poor. The effects to be gained by properly grouping such trees as can be selected from the very excellent collections of hardy kinds to be found in the Victorian nurseries would materially add to the appearance of the grounds in a short space of time, but it will be decidedly necessary to prepare the spots for their reception with some rich soil which must be carted for the purpose. In many parts of the grounds there are a greater number of stiff clay patches, than of good soil. The same remark applies to the Botanic Gardens; hence the necessity for increasing the ploughing and cartage vote next year. It will be desirable to agriculturally drain the Government House grounds; for though trees may exist, and even grow in poor soils, there must be natural or artificial drainage before they will thrive properly. I propose to use gutter tiles for the walks in the grounds, for *surface* drainage, similar to those which I have employed in the principal new walks in the Botanic Gardens. This plan prevents the walks from being cut up by heavy rains. The style of French drainage, previously described, I have found by far the best for the land, and the general growth of trees, in those parts of the Botanic Gardens which I have so treated, and the same principle should be applied to these grounds. A copious supply of water through pipes will be needed for the groups, and single specimens planted on the grand lawn; and as the situation is an exposed and dry one, the work of

keeping transplanted trees and shrubs in good order during seasons of drought, will be an important one. If a larger staff of labor is provided, according to my estimates furnished, the grounds can be at once laid out, and the only expense afterwards would be the wages of the gardeners in keeping them in order.

The Domain requires much preparation of the soil, and judicious planting, since in some places the earth is exceedingly poor. With careful attention, however, it can be made a most beautiful public ground. The road along the Yarra bank, as far as Prince's Bridge, should be prepared, and in this case an avenue would be appropriate instead of the wild wattles (*Acacia mollissima*) which though they now act as a temporary shade during the summer, are not particularly picturesque. In this instance it would be desirable to form the avenue in such a manner, that while the perspective lines, which are the chief beauty of an avenue are preserved, occasional openings will occur, through which visitors on the bank and the river, may obtain views of the landscape beyond. The site on which Government House stands is undoubtedly a most commanding and beautiful one, unsurpassed anywhere in the colonies; and the surroundings can be made worthy of the situation. Some good views can be created from the elevated ground by judicious planting, in which the distant city, with its tall spires, would form a background, while many objectionable masses of bricks and mortar could be hidden. A study of the upper lines and undulations, and the prcservation of the natural contour of the grounds, where harmonious, will materially aid in producing the proper effect.

The footpaths of the South Yarra drive, and some of the walks in the Domain have cost much trouble to keep in order; and with such a small staff of laborers in comparison with the immense size of the grounds, and the vast quantity of work which has had to be done, I have been compelled to limit the progress in proportion to the money available. The Government House orchard has been dug over many times during the past year; the old pear and apple trees have been pruned; and some choice orange trees from Messrs. Shepherd and Co.'s. establishment in Sydney have been planted around the croquet lawn.

I have the honor to be,

Sir,

Your obedient Servant,

WILLIAM R. GUILFOYLE,

Director.

TO THE COMMISSIONERS FOR THE MELBOURNE AND  
PHILADELPHIA EXHIBITIONS.

GENTLEMEN,

November 1st, 1875.

I have the honor, as you request, to furnish a descriptive Essay of the fibres, papers, gums, resins, dyes, woods, carpological specimens, &c., prepared and sent by me to the Melbourne Exhibition, and which you have been pleased to forward to Philadelphia.

As regards the fibres, papers, and woods, it must be admitted they far exceed in number those which have been sent from this establishment to former Exhibitions. The whole of the exhibits described were prepared by myself and two assistants with but crude appliances at our command, and within eight weeks prior to the opening of the Exhibition. The greater portion of the necessaries forming the Laboratory which once belonged to this department, were transferred to another branch; thus I have had to make the best of the few opportunities afforded me for preparing in so short a time, the present collection. The fibres, some forty in number, were produced in a very primitive way; the branches or leaves of the plants being merely steeped in water, and afterwards combed by hand. The quality and quantity, however, of each kind thus prepared will, I trust, serve the purpose of testing their commercial value at Philadelphia.

Many new discoveries in the way of fibre-yielding material are shown, not only of Victorian native products, but those of the other colonies acclimatised here, and of exotics also hitherto esteemed only for ornamental purposes in gardening.

Had time permitted, my collection of exhibits would have been far greater. I would have been able to collect and test the value of many plants which I know exist on the borders of Gippsland, and even nearer to Melbourne—I mean the Macedon and Dandenong Ranges. It is almost needless for me to say that the colony of Victoria affords great facilities, both as regards soil and climate, for the cultivation of the valuable commodities which constitute fibre, and paper material. For instance, the Chinese grasscloth plant “*Bœhmeria nivea*,” the New Zealand flax, “*Phormium tenax*,” the “*Fourcroya gigantea*,” the “*Agaves*,” the “*Lagunaria Pattersoni*”—Cowitch tree of Norfolk Island, the Yuccas—*aloifolia*, *filamentosa*, and *gloriosa*; the Abutilons, and Hibiscus of China, India and America; the *Sparmannia Africana*, and a host of other foreign plants all thrive as well, and in some instances better, in this colony than in their native homes.

The samples of Sparmannia sent to the Melbourne Exhibition have been prepared from both the living and dried barks of the shrub. I have never read of it ever having been discovered that this plant contained a fibre of any value. Hitherto I had only known it to be interesting as an ornamental shrub, or the plant in whose blossoms the great Linnaeus first discovered the sexual system in botany. My introspection of its fibrous nature, as with others now exhibited, was only gained by mere accident in a hurried attempt to collect and prepare a variety of fibres for your Exhibition, but if even one of them proves to be of commercial value, and I believe many of them will, because of their textures, and the quickness of their growth, the object I have in view will be gained, as they will be a boon to the colonists. The Sparmannia, like the grass-cloth plant of China as soon as cut, shoots up (even in a poor soil) with wonderful vigour. The canes, if I may call them such, are often as thick as one's thumb, and they average in height from six to eight feet. In good soil, two crops may be safely reckoned upon in the year.

The plants of Queensland, from which fibres have been prepared, have all been grown here, and were introduced by the late Mr. Dallachy, and Baron von Mueller, my predecessors in the directorship of these Gardens. Judging from the growth of the *Hibiscus heterophyllus*, *Sida retusa* (Queensland hemp), *Pipturus propinquus* or Queensland grass-cloth plant, *Brachychiton acerifolium*, "The Flame tree," *Sterculia rupestris*—"The Bottle tree," and the samples of fibre now produced from them; the great harvest to be gained by their cultivation in Victoria would be as great as in the sister colony. It may appear strange to many, that plants like these, and others described indigenous to a warmer clime should thrive as well, and even better, in a cooler one, yet there are ample proofs that such is fact. The growth of the flame-tree for instance (*Sterculia* or *Brachychiton acerifolium* of Queensland and New South Wales) is more rapid in Victoria than in either of the colonies mentioned, and the bast furnished by this tree is, I consider, superior to "Cuba bast." This of course remains to be proved by those in Philadelphia, who are better able to judge of its merits, and of others which I have described in my list. But it is more singular still, to observe, that plants which grow side by side with these in warmer latitudes, will not grow here at all, but merely exist. *Laportia gigas*, the great stinging tree of which I have sent samples of fibre from plants which never attain in this garden more than four feet in height—being cut down by frost every winter. Yet I have seen it beside the flame-tree

in the brush lands of Queensland and New South Wales, attaining a height of seventy-five feet, and with a trunk more than five feet in diameter.

The *Pipturus propinquus*, *Sterculia rupestris*, *Sida retusa*, and many others grow as quickly here as in Queensland. Quite as good results, therefore, might be expected by cultivating these plants; but need we go further than our own colony of Victoria for quality or quantity of fibre or paper material, when our forests teem with valuable plants suitable for their manufacture. If we only instance the *Pimelias*, *Dianellas*, *Plagianthus*, *Cladiums*, *Lepidosperma* or "Mat-grass," *Commersonia*, *Brachychiton populneum*, *Urtica incisa*, *Cyperus*, *Typha*, *Scirpus*, *Carex*, *Isolepis*, and the rushes *Juncus*—*vaginatus*, *maritima*, and *pauciflora* (and there are scores of other indigenous plants equally valuable), rags need no longer be collected for paper making, or introductions from other countries for cordage. With sixty millions of acres of good land included between the parallels  $30^{\circ}$  and  $39^{\circ}$  south latitude, we can, without cultivation, reap abundant harvests of paper material, even from various species of *Eucalypti*, *Xerotes*, *Melaleuca*, *Cyperus*, and others, and indeed from some of the grasses which are plentiful in the midst. Our native vegetable resources are great, and should therefore be thoroughly searched up. My thirty crude samples of paper, which are sent in frames, were prepared under great difficulties, and were only made to prove what can be done with some of our native plants. Many of them are new, but the indefatigable Mr. Ramsden of the Victorian Paper Mills, has devoted his attention particularly to the manufacture of paper from Victorian plants, and he will, no doubt, be able to add to his collection long before the colony has been thoroughly explored.

The Dyes forwarded in bottles, are not so numerous as they would have been had time permitted me to send out collectors; but the samples of silk, calico, and woollen material stained with them show a variety of beautiful colors, the value of which will, no doubt, be proved at Philadelphia.

I regret to say that my collection of woods could not be properly seasoned. Some of them were polished within a week after they were cut from the tree, consequently many of the specimens have split from end to end.

I have the honor to be,

Gentlemen,

Yours, &c.,

W. R. GUILFOYLE,  
Director, Melbourne Botanic Gardens.

ESSAY ON THE FIBRES FORWARDED TO THE AMSTERDAM INTERNATIONAL HORTICULTURAL EXHIBITION, FROM THE MELBOURNE BOTANIC GARDENS. BY W. R. GUILFOYLE, F.L.S., DIRECTOR.

April 15th, 1876.

The attention of all civilized nations has been of late years so largely and anxiously taken up with the important subject of fibre plants, suitable for the manufacture of textile fabrics, paper, &c., and as I am directing my attention, as far as the very limited time and means at my disposal will admit, to the development of our resources in this respect, it may not be out of place to offer a few brief remarks upon the collection of fibres which have been forwarded to your exhibition, and which have been prepared at the Melbourne Botanic Gardens from indigenous Australian and New Zealand plants; the latter being naturalized in the gardens. In preparing these fibres no elaborate machinery has been employed, the appliances at hand for this purpose being of the most crude description, and the mode of preparation adopted the most simple, having been accomplished by maceration in water, or *retting* as it is technically termed, or by a simple boiling process. The former operation has been employed with regard to the different barks from which fibre has been prepared; whilst the latter process has been employed exclusively to plants whose leaves and stems afford fibre; such as the Dianellas, Xerotes, Juncus, Lepidospermas, Phormium, Pandanus, Cordylines, &c. I find that by this mode a great saving of time and labor is effected (whilst the fibre is in some instances improved) from 6 to 50 hours being sufficient to digest the outer fleshy coating (*epidermis*) of the leaves sufficiently well to admit of its easy removal by scraping, which has at the same time, the effect of removing the resin and other deleterious substances to such an extent from the fibre, as to admit of the latter being passed through the heckling machine, so as to arrange the filaments in parallel order and remove all extraneous matter.

No special claims as to excellence, with regard to the manner in which the samples of fibre shown on this and other occasions have been prepared is put forth; the sole object of the writer being, to bring prominently before the world, the fact, that in the production of indigenous fibre plants, and plants suitable for paper making, Australia and New Zealand, must at no distant date play a very prominent part indeed; and at the same time to inspire, in the minds not only of the colonists themselves, but also in those of influential mercantile men and

capitalists, in Europe and elsewhere, a desire to have our resources in this respect thoroughly tested and thus give an impetus here, to those most important branches of industry, viz.: the manufacture of textile fabrics and paper. The latter bids fair to become one of the most important of our local industries, and our enterprising fellow colonist Samuel Ramsden, Esq., deserves the greatest praise for the able manner in which he has, in the face of many difficulties, established his extensive paper factory on the banks of the river Yarra at Melbourne. This gentleman has of late devoted his attention to the production of paper from native plants, and with the most happy results, as the very excellent samples of paper forwarded to the Philadelphia Exhibition will amply testify. And, it has been further proved, in England, that as material for paper-making many of our Juncaceæ, and Cyperacæ, are unsurpassed.

There was forwarded to the same exhibition a collection of paper, comprising fifty-four kinds, prepared at the Melbourne Botanic Gardens (under my direction), in a rough state, no less than thirty-nine of which were the produce of Australian plants alone, mostly natives of the colony of Victoria. The remainder were prepared from plants which have been acclimatised in these gardens, New Zealand, and South America; furnishing the major portion. And when we come to consider the immensity of the Australian continent, and its as yet undeveloped vegetable resources, we may reasonably suppose that the present collection represents a mere fraction only, of the native fibre yielding plants, and that at no very remote period Australia will not yield the palm even to the Indies in this respect.

The present collection comprises many fibres prepared from plants which have been hitherto considered as valueless, at least for this purpose, although a few were approved paper plants. Those specially worthy of note as being new, are, *Cordyline cannæfolia* and *C. nutans*, *Juncus maritimus* and *J. vaginatus*, *Pandanus Fosterii*, and *P. pedunculatus*, *Poa australis* (variety ten), *Typha angustifolia*, *Xerotes longifolia*, *Lepidosperma gladiatum*, *Cassytha melantha*, *Carex appressa*, *Musa Banksii*, and *Dianellas elegans*, *cœrulea*, *longifolia*, *revoluta*, and *tasmanica* from Australia; *Cordyline pumilio* and *Astelia Banksii* from New Zealand. From the samples of fibre shown on this occasion practical men will see that with proper machinery and other appliances, we can supply fibres not only suitable for coir-matting, ropes, and brush making, but also for fishing-nets and lines, and even for the most delicate textile fabrics. Our extensive geographical range too, and

varied temperature of climate coupled with choice of soils and situation, afford immense scope for the successful growth of foreign fibre plants ; thus while many parts of Victoria, are eminently adapted for the growth of the common Flax (*Linum usitatissimum*), other districts will produce the Hemp (*Cannabis sativa*), the Jute (*Corchorus olitorius*), the Rhea of India, better known as "the Chinese Grasscloth plant" (*Bæhmeria nivea*), which grows here with great luxuriance, the Toddy Lily (*Agave americana*, commonly known as the American aloe), the Fibre or Giant Lily of S. America (*Fourcroya gigantea*), the African Hemp (*Sparmannia Africana*), which produces a superior fibre, the Adam's needle, and Dagger plant (*Yuccas gloriosa* and *aloefolia*), the Dragon Tree (*Dracæna Draco*), and a host of others too numerous to mention, from all of which fibres have been prepared under my supervision at the Melbourne Botanic Gardens.

Next to India, New Zealand (as far as at present known) is perhaps the richest of all countries in fibre yielding plants. Commercially speaking, in her *Liliaceæ* alone a mine of wealth might be opened up; and it is a matter for surprise (considering the quantity and quality of the fibre of the many species of Cordyline with which her different islands abound, not to speak of the various trees from which bast of the most beautiful lace-like texture can be obtained) that a brisk trade has not sprung up in this direction ere now. Although the palm must be awarded to the New Zealand Flax (*Phormium tenax*) in point of fineness and adaptability in the manufacture of textile fabrics, &c.; yet when we come to consider the amount of labor necessary in preparing the fibre for market, in comparison with that required in the preparation of the Cordylines, the advantages would be almost counterbalanced. It would appear, however, that the great difficulty experienced in removing the resin and silica from the *phormium* has of late years been overcome by the invention of elaborate machinery, and the following extracts taken from a work published by the patentee, J. H. Dickson, on the "*Fibre plants of India, Africa, and our Colonies*," will serve to illustrate the great commercial value of this almost inexhaustible plant. At pages 23 and 24 (*Appendix*) he says:—"This very extraordinary plant, so difficult to do anything with, after giving many like myself great trouble to discover the way to make it marketable as an article for spinning purposes, I turned my attention to, after having dropped or left off all idea of touching it, after many trials in 1855 and 1856, but finding my improved machinery could make the article marketable without steeping I continued my course until I have done all that I

could desire because of the following facts. The article is gathered by the natives, and sold by them in Auckland at £10 per ton, and as the New Zealand Government has taken the wise and business-like course to cause the fibre plants of the country to be brought into a state for exportation to England, by an offer of a reward of £2,000 to the first person who will, by his own invention produce forty tons of *Phormium tenax*, so prepared as not to exceed £25 per cwt. (?) in cost, making ready for market, and £1,000 reward to the next five persons who may join and work up twenty tons by anyone's invention so as to produce the same advantage. Such rewards induced me to 'try again,' and the result of my labours on a bale sent me by Messrs. Gibbs, Bright & Co., of Liverpool, has caused me to receive from one of the best judges of Flax in England the following letter :—

“ Alma Terrace, Kensington,

“ October 17th, 1863.

“ DEAR SIR,—The sample of New Zealand Flax (*Phormium tenax*) you have sent me may be worth from £40 to £50 per ton for coarse spinning purposes, but much depends upon how it turns out in heckling; the finer quality is in my opinion worth about £60 per ton.

“ Yours truly,

(Signed),      “ J. R. ATKINSON.

“ Mr. J. H. Dickson.”

Mr. Atkinson is the retired partner of the firm of Messrs. Hives and Atkinson, Flax Spinners, Leeds.” Mr. Dickson further on says :—“ As a practical man, I am confident that the New Zealand Flax (*Phormium tenax*) must come in for the trade of Dundee over the head of Flax, as Jute by itself can never, so long as it is ruined in India by the retting or steeping system, be worked as a warp yarn unless mixed with Flax.” The following extract on the “New Fibre plants of Commerce,” taken from the *Hour*, and which appeared in the Melbourne *Argus* of March 28th, 1876, will further show the value of the *phormium* :—“ Just at the present when the supply of flax is very short, and is thereby subjecting many manufacturers in different parts of the country to considerable inconvenience, we are desirous of calling the attention of those who may be interested in the subject to the *Phormium tenax* of botanists or Native Flax of New Zealand—(*A slight mistake is here made by the writer of the article, the name Native Flax, is applied in New Zealand to Linum monogynum, which is a true flax. The phormium is known as the Flax Lily or New Zealand Flax*)—which is found on the hills and in the valleys of every province in its islands, but which has excited comparatively little notice in Great Britain. For

many years past the Maori race have used this flax for clothing purposes and have even exported it to other countries, and it has been woven into damask by Messrs. D. Lowrie and Sons of Kirkaldy, a specimen of which was forwarded to the Otago Museum some considerable time back. The Agent-General, in referring to it, quotes from a correspondent that the sample of real damask tablecloth was made entirely from *phormium* fibre, which consisted of some rather coarse native dressed flax, the bleaching of which having been hurried, the cloth was consequently somewhat yellow-stained, and although not fine was very good and substantial.

Some time ago the Government of New Zealand so fully realized the advantages that might accrue by putting the various fibres which are so plentiful there to profitable use, that they offered a bonus of £2,500 for the first 100 tons of printing paper made in the colony, either from this fibre, or a grass called "*Snow grass*," which was found all over the Maturari plains and on the tops of the hills of Otago, growing about four feet in height, being indeed very similar to *esparto grass*, which has been sent of late years from Spain to England in large quantities, and is used in the manufacture of paper. Some time ago it will be remembered considerable apprehensions were excited in this country owing to the great demand for paper, which formerly was made chiefly from rags, upon the latter becoming so scarce, that there was a prospect of an insufficient supply for the future. These apprehensions are now allayed, as it has been found that paper can be made from anything that possesses fibre, while from New Zealand it appears that the *phormium* has been most successfully used, and has figured in the composition of various articles in the most satisfactory manner.

Not only has linen cloth been made from native flax (*phormium tenax*) but rope, matting, excellent wrapping paper and cardboard, and also a kind of roofing felt which is likely to be extensively used. Messrs. Fraser and Tinne have erected a very complete and extensive plant at the Kaihu mills, in the district of Northern Wairoa, the Kaihu Company (Limited) having expended something like £27,000 in the enterprise. The *Southern Cross* in referring to these operations says:—"There are now lying at this office samples of wrapping paper, cardboard, and roofing felt, which for quality and cheapness should take the command of the market. The paper is of a fine close texture, and as strong almost as parchment. It will tear, but not break, and the prepared cardboard, for roofing purposes, is certainly better in quality than the imported felt roofing, and can be sold here for 2d. per foot.

The matting manufactured by the Kaihu Company is cheaper than the coir matting and will stand three times the wear and tear. Altogether, we may consider the result of these operations as most successful. For coarse paper, such as that manufactured at Kaihu Mills, there is a large demand in the colony, and, when once the article gets into use and becomes known and appreciated, the imported material is bound to yield the palm to it." So much for the New Zealand Flax, and it will be hardly credited, when it is stated upon good authority, that we have, at our very doors, an article equal if not superior to the *phormium*, for the purpose of paper making, viz.:—the Coast Sword Rush (*Lepidosperma gladiatum*) (sample of fibre exhibited), which is found in the greatest abundance along our coast line, and which Mr. Cosmo Newbery, the Director of the Technological Museum of Melbourne, called attention to many years ago, as did also Baron von Mueller, my predecessor; and great credit is due to these gentlemen, especially the latter, in his endeavours to bring the vegetable products of the colony before the public, by having fibres, paper, &c., prepared from native plants, at the laboratory which formerly existed under his direction at the Melbourne Botanic Gardens. But, unfortunately, his specimens partook of microscopical form only, and, though valuable as objects of scientific interest, they were too meagre to attract the attention of the commercial public. This small mistake I have tried to obviate wherever practicable, in having prepared, samples of his discoveries (independent of my own), of such size as cannot fail to attract general attention. The want of a laboratory for technical purposes, however, has been a great drawback, in the preparation of these and other vegetable products.

I would take this opportunity too, of testifying to the ardor of a fellow laborer in this field of scientific and useful research, Mr. Walter Hill, the Director of the Brisbane Botanic Gardens, who has been indefatigable in his endeavours to develop the resources of Queensland, in this respect; and the fibres, &c., shown at former exhibitions held at Melbourne, Sydney, and elsewhere, prove that he has not been unsuccessful.

I will not enlarge on this subject at the present time, further than to give the names of the plants from which these fibres have been prepared, both scientific and common, in full; also the orders to which they belong and a short description as to their geographical distribution, and habits; and their adaptability to various economic purposes as far as the limited means at my disposal for judging the same will allow. Before concluding I may state that in view of furthering the commercial interests

of the Australian colonies in general, and the colony of Victoria in particular, it is my intention at an early date to compile a small work on the "Fibre Plants of Australia," both indigenous and exotic.

I have the honor to be,

Gentlemen,

Yours obediently,

W. R. GUILFOYLE,  
Director Melbourne Botanic Gardens.

The Commissioners of the  
Amsterdam International Horticultural Exhibition.

† LIST OF PLANTS INTRODUCED INTO GARDENS SINCE MAY 1875,  
EITHER QUITE NEW TO THE ESTABLISHMENT OR TO RE-  
PLACE THOSE WHICH HAD BEEN LOST IN FORMER YEARS.

Alocasia Marshallii	Azalea hybrida, variety :	Croton maximum
Alpinia vittata	Dunbarii	aurea-maculatum
cerulea	Eulalie	Caladium hybridum,
Averrhoa Carambola, va- riety:—	Mars	Prince Albert Ed- ward
"Chow Ka"	viscosa, variety vit- tata punctata	Ceanothus divaricatus
"Quat Ink"	Aphelandra nitens	Clethra arborea
"Chin Ink"	Liboniana	*Calamus Australis
Achillea Gerberii	Arenga Wightii	Camellia hybrida, va- riety:—
Acer Negundo, variety variegata	Asparagus lucidus	Triomphe de Loddi
Alsomitra sarcophylla	Arundina chinensis	Augustina
Ascyrum crux andræ	Amorphophallus variabilis	Souvenir Emile Du- fresne
Aucuba japonica, variety macrophylla	Agave Americana, va- riety longifolia va- riegata	Souvenir nova
*Aralia digitata	Butea superba	Verschaffeltii
Sieboldti, variety variegata	Borago laxiflora	Syngno
Azalea hybrida, variety:	*Billardiera scandens	Vulcan
Triomphe de May- encc	Begonia—11 varieties	Reine des Fleurs
Souvenir de Perony	Brucea Sumatrana	Reine des Belges
Lovely	Bouvardia flava	Walders alba
Augustus	Van Houttei	Leopold I.
Clynia	Bauhinia arborea	Mathotiana, v. alba
	Croton (Codiæum) New- boldianum	Romaniana
		centifolia, v. carnea

NOTE.—The plants marked thus \* have been re-introduced.

† By referring to last year's report it will be seen that 1,122 new species and 1,272 varieties of plants were added to the collection.

<i>Camellia hybrida</i> , variety:	* <i>Dammara Moorei</i>	<i>Lotus paniculatus</i>
centifolia, v. <i>rosea</i>	<i>Dæmonorops Lewisiana</i>	* <i>Lathyrus latifolius</i> , va-
<i>Insubria</i>	* <i>Encephalartos (Macro-</i>	riety <i>albus</i>
<i>Duchess of Buccleugh</i>	<i>zamia) villosus</i>	<i>Melianthus Schimpferii</i>
<i>Mrs. Cope</i>	* <i>Erythrina vespertilio</i>	<i>Myrsine coriacea</i>
<i>Duc de Litta</i>	* <i>glauea</i>	<i>salicina</i>
<i>Hendersonii</i>	* <i>Euonymus radicans</i> ,	<i>Machærium firmum</i>
<i>De la Reine</i>	variety <i>variegatus</i>	<i>Menimia (?) turgida</i>
<i>Compacta alba</i>	<i>Frenela Eudlieherii</i>	<i>Maranta arundinacea</i> , va-
<i>Jenny Lind</i>	<i>Ficus Parcellii</i>	riety <i>alba</i>
<i>Temple of Venus</i>	<i>Fuchsia corallina</i>	<i>pulchella</i>
<i>Cornus paniculata</i>	Enchantress	<i>Myrica rubra</i>
<i>Calycanthus horridus</i>	Coma	* <i>Myosotidium nobile</i>
<i>Cyrtanthus spiralis</i>	Alpha	<i>Musa superba</i>
<i>Clausena Whampree</i> , va-	<i>Forsythia</i> sp. <i>variegata</i>	<i>Microtis atrata</i>
riety:—	<i>Gymnostachya aueps</i>	<i>Nephelium Litchii</i> , va-
“ Hung ”	* <i>Gillandina Bonduc</i>	riety:—
“ Ink Wat ”	<i>Gloxina hybrida</i> , variety:—	“ Hung Si ”
“ Pak Toug ”	Madame le Jeune	“ Hass Tip ”
<i>Clematis gentianoides</i>	Sir Chas. Mac Malion	“ Kai Wat ”
<i>Coburghia trichroma</i>	Mrs. A. Chirnside	“ Jak Ho Pou ”
<i>Crinum ornatum</i>	Mrs. A. R. Wallis	“ Lan ”
<i>Campanula gracilis</i>	Emily Merritt	“ Kwa Took ”
* <i>Canella alba</i>	Lady McCulloch	“ Wai Chee ”
<i>Cinnamomum dulce</i>	Grace Archer	“ No Mai Chu ”
<i>Chondodendron tomento-</i>	Maggie Nind	<i>Nerinc coruscans</i>
sum	<i>Gymnogramme Morti-</i>	<i>Oncoba spinosa</i>
<i>Canua Fernandii</i>	meriana	<i>Ouobrychis paucidentatus</i>
Peruviana	* <i>Galium Aparine</i>	<i>Olearia viscosa</i>
<i>Crassula mammillaris</i>	<i>Goodyera discolor</i>	<i>Orthoceras strictum</i>
<i>Celmesia longifolia</i>	pubescens	* <i>Pinus silæa</i>
<i>Chiloglottis Gunnii</i>	<i>Grevillea intricata</i>	<i>Llaveana</i>
<i>Cæsia vittata</i>	<i>Gladiolus</i> —46 varieties	<i>Pentstemon hybridum</i> ,
parviflora	<i>Hakea rosea</i> (?)	variety:—
corymbosa	pandanarpa	Edith
<i>Cordyline Fraserii</i>	<i>Higginsia macrophylla</i>	Surpasse Madame le
excelsa	<i>Hyphorbe Verschaffeltii</i>	Bryant
augusta	<i>Harpullia pendula</i>	* <i>Phœnix spinosa</i>
splendens	<i>Hibiscus liliiflorus</i>	<i>Poterium muricatum</i> , va-
<i>Calyptrocalyx spicatus</i>	<i>Hymenanthera latifolia</i>	riety <i>lilacinum</i>
<i>Diospyros Kaki</i> , variety:	<i>Hydrangea japonica</i> , va-	<i>verrucosum</i>
large fruited	riety speciosa	<i>Ptychosperma rupicola</i>
small red fruited	<i>Jacaranda Clauseniana</i>	<i>Pogostemon Patchouly</i>
Morrißiana	<i>Kerria japonica</i> , variety	* <i>Pittosporum ferrugi-</i>
<i>Daphne laureola</i>	fl. pl. <i>variegata</i>	<i>neum</i>
<i>Dorstenia Reidiana</i>	<i>Laurus Carolinianus</i>	<i>Phajus hyacinthiflorus</i>

Note.—The plants marked thus \* have been re-introduced.

Pandanus pygmaeus	Pisonia Sinclairi	Stachys Balbissii
Pinanga ternatensis	Quercus salicina	Sapouaria ocyoides
*Panax Colensoi	carnea	Toxicophlæa spectabile
Pterocarya Caucasicæ	Retinospora pissifera,	Trachylobium Hormannianum
Philadelphus coronarius,	variety aurea	
variety fl. aureus	Rhododendron corryanum	Tecoma hybrida
Passiflora macrocarpa	Rhodomyrtus trineura	Trapa bicornis
Poinsettia pulcherrima,	Ranunculus oxyspermus	Terminalia Muelleri
variety alba	Lyalli	Thcophrasta imperialis
Pithecellobium Hender-	*Rondeletia speciosa	Thysanotus tuberosus
sonii	Raudia Fitzalanii	Vitex Loureli (?)
lucidum	Rochea coccinea, variety	Vitis cantonensis
*Picea graudis	splendens	Veronica chamædrys,
*Psoralea aculeata	*Sterculia Bidwilli	variety aurca
*aphylla	Sabal Blackburniana	Wigandia Vigieri
*Pleroma sarmentosa	Sapindus murata	*Xanthochymus pictorius
*Patersonia glauca	Salvia fulgens	

NOTE.—The plants marked thus \* have been re-introduced.

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## LIST OF PLANTS POSSESSING MEDICINAL, AND OTHER PROPERTIES, WORTHY OF SPECIAL NOTE; AVAILABLE FOR DISTRIBUTION BY SEEDS, CUTTINGS, OFFSETS, AND ROOTED PLANTS:—

### I.—MEDICINAL PLANTS AND HERBS.

Botanical Name.	Vernacular Name.
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Amni majus ...	... "The Bishop's-Weed."
Anchusa officinalis	... "The Alkanet," or "Spanish Bugloss."
Asparagus alba ...	... "The white Asparagus."
Aspidium flix-mas	... "The male Fcru."
Asplenium filix-fœmina	... "The female Fern."
Achillea millefolium	... "The common Milfoil," or "Yarrow."
nobilis ...	... "The Noble Milfoil."
Androsænum officinale	... "The Tutsan."
Anthemis nobilis ...	... "The Chamomile."
Atropa Belladonna	... "The deadly Nightshade."
Artemisia Absinthium	... "The Wormwood."
argentea ...	... "The Roman Wormwood."
Abrotanum ...	... "The Southern-wood," or "Oldman."
Bupleurum fruticosum	... "The scrubby Hare's-ear."
Ballata nigra ...	... "The foetid Horehound."
Borago officinalis	... "The common Borage."

Botanical Name.		Vernacular Name.
<i>Borago orientale</i> ...	...	"The Turkish Comfrey."
<i>Berberis vulgaris</i> ...	...	"Common Berberry."
<i>Beta vulgaris</i> ...	...	"The common Beet."
<i>Canna indica</i> ...	...	"The Indian Shot."
<i>Calendula officinalis</i> ...	...	"The common Marigold."
<i>Crassula Tetragona</i> ...	...	...
<i>Cercis siliquastrum</i> ...	...	"The Judas-tree."
<i>Cistus ladaniferus</i> ...	...	"The gum Ladanum."
<i>Cneorum tricoccum</i> ...	...	"The Widow-wail."
<i>Conium maculatum</i> ...	...	"The common Hemlock."
<i>Crocus sativus</i> ...	...	"The true Saffron."
<i>Colchicum autumnale</i> ...	...	"The meadow Saffron."
<i>Cotyledon orbiculata</i> ...	...	"The African Pennywort."
<i>Chelidonium majus</i> ...	...	"The common Celandine."
<i>Digitalis purpurea</i> ...	...	"The Foxglove."
<i>Delphinium staphisagria</i> ...	...	"The Stavesacre."
<i>Datura Stramonium</i> ...	...	"The Thorn-Apple,"
<i>Dorema assafœtida</i> ...	...	"Assafœtida."
<i>Dracocephalum Moldavicum</i> ...	...	"The Dragon's-Head."
<i>Echium vulgare</i> ...	...	"The Viper's Bugloss."
<i>Ecbalium agreste</i> ...	...	"The squirting Cucumber."
<i>Glycyrrhiza echinata</i> ...	...	"The prickly Liquorice-root."
<i>Geum urbanum</i> ...	...	"The Clove-root."
<i>Galega officinalis</i> ...	...	"The goat's Rue."
<i>Hyoscyamus albus</i> ...	...	"The white Henbane."
<i>niger</i> ...	...	"The black Henbane."
<i>Hyssopus officinalis</i> ...	...	"Hyssop."
<i>Hypericum perforatum</i> ...	...	"St. John's Wort."
<i>Humulus Lupulus</i> ...	...	"The common Hop."
<i>Ilex cassine</i> ...	...	"The Dahoon."
<i>Juniperus communis</i> ...	...	"The common Juniper."
<i>Virginiana</i> ...	...	"The red Peucil Cedar" or "Savin" of North America.
<i>Phœnicaea</i> ...	...	"The Phœnician Savin."
<i>Sabina</i> ...	...	"The common Savin."
<i>Jasminum officinarum</i> ...	...	"The common Jasmine."
<i>nudiflorum</i> ...	...	"The naked-flowered Jasmine."
<i>Lappa major</i> ...	...	"The Burdock."
<i>Lectuca virosa</i> ...	...	"The poison Lettuce."
<i>Leonotis Leonurus</i> ...	...	"The Lion's-ear."
<i>Lavandula Stœchas</i> ...	...	"French Lavender."
<i>Linum usitatissimum</i> ...	...	"The common Flax."
<i>Mellissa officinalis</i> ...	...	"The common Balm."
<i>Mirabilis Jalapa</i> ...	...	"The Marvel of Peru."
<i>Meuyanthes trifoliata</i> ...	...	"The Buck" or "Bog Bean."
<i>Marrubium vulgare</i> ...	...	"The common Horehound."

Botanical Name.	Vernacular Name.
<i>Mentha viridis</i> ...	"The Spearmint."
<i>piperita</i> ...	"The Peppermint."
<i>cervina</i> ...	"The Stagmint."
<i>Malva crispa</i> ...	"The curled Mallow."
<i>Nepeta cataria</i> ...	"The Catmint."
<i>Nymphaea alba</i> ...	"The white Water-Lily."
<i>Origanum vulgare</i> ...	"Common Marjoram."
<i>Phytolacca octandra</i> ...	"Mexican Verbachina."
<i>decandra</i> ...	"Virginian Poke-weed."
<i>Polypodium vulgare</i> ...	"The common Polypody."
<i>Prunella vulgaris</i> ...	"The Selfheal."
<i>Prunus Lauro-Cerasus</i> ...	"The common" or "Cherry Laurel."
<i>Pyrethrum Parthenium</i> ...	"The Fever-few."
<i>Poterium sanguisorba</i> ...	"The lesser Burnet."
<i>Physalis somnifera</i> ...	"The Mexican winter Cherry."
<i>Papaver somniferum</i> ...	"The opium Poppy."
<i>Ruta graveolens</i> ...	"The common Rue."
<i>Ricinus communis</i> ...	"Palma-christi," or "Castor Oil."
<i>Rhus Toxicodendron, variety radicans</i> ...	"The poison Oak."
<i>Ruscus aculeatus</i> ...	"The Knee Holly" or "Butcher's Broom."
<i>Rheum Emodi</i> ...	"The Indian Rhubarb"
<i>Sambucus nigra</i> ...	"The common Elder."
<i>Satureja Thymbra</i> ...	"The common Savory."
<i>montana</i> ...	"The winter Savory."
<i>Solanum Dulcamara</i> ...	"The woody Nightshade" or "Bitter-Sweet."
<i>Sedum Telephium</i> ...	"The Orpine," or "Livelong."
<i>reflexum</i> ...	"The reflexed Stone crop."
<i>Saponaria officinalis</i> ...	"The Soap-wort."
<i>Spartium scoparium</i> ...	"The yellow Broom."
<i>Salvia pratensis</i> ...	"The Meadow Sage."
<i>Smilax aspera</i> ...	"The Italian Sarsaparilla."
<i>Scolopendrium vulgare</i> ...	"The Hart's-tongue Fern."
<i>Scilla maritima</i> ...	"The Squill."
<i>Taxodium distichum</i> ...	"The deciduous Cypress."
<i>Tanacetum vulgare</i> ...	"The common Tansy."
<i>Tamarix gallica</i> ...	"The French Tamarisk."
<i>Teucrium marum</i> ...	"The cat Thyme."
<i>betonicum</i> ...	"The Betony."
<i>Verbena officinalis</i> ...	"The Holy-herb" or "Verbain,"
<i>Verbascum Thapsus</i> ...	"The Shepherd's Club."
<i>Valeriana officinalis</i> ...	"The Valerian."

## II.—PLANTS USED FOR DYEING, TANNING, FOOD, ETC.

Botanical Name.	Vernacular Name.
<i>Alpinia nutans</i> ...	... "The Nodding Alpinia."
<i>Anthurium ramosus</i> ...	... "The branched Asphodel" (fodder).
<i>Ailanthus glandulosus</i> ...	... "Chinese tree of Heaven" (food for Chinese Silkworm).
<i>Anthemis tinctoria</i> ...	... Dye plant.
<i>Agave Americana</i> ...	... "The Toddy Lily" or "American Aloe" (fibre, brandy).
<i>Bœhmeria nivea</i> ...	... "The Rhea" or "Chinese Grass-cloth plant" (fibre).
<i>Crithmum maritimum</i> ...	... "The Samphire" (pickle).
<i>Capparis spinosa</i> ...	... "The Caper" (pickle).
<i>Carthamus tinctorius</i> ...	... "The Safflower" (Dye plant).
Cordylines of sorts	(Fibre.)
<i>Dioscorea Batatas</i> ...	... "The Chinese Yam."
<i>Dipsacus Fullonum</i> ...	... "The Fuller's Teazel."
"Folle Blanche"	... "Cognac Grape."
<i>Fourcroya gigantea</i> ...	... "The Giant Lily" (fibre).
<i>Guizotia oleifera</i> ...	... "The Ran-til Oil plant."
<i>Isatis tinctoria</i> ...	... "The Dyer's Woad."
<i>Laurus nobilis</i> ...	... "The Victor's Laurel" or "Sweet Bay" (conserve).
<i>Linum usitatissimum</i> ...	... "The common Hemp" (fibre, &c.).
<i>Madia sativa</i> ...	... "The Californian Oil plant."
<i>Myrtus Ugni</i> ...	... "The Chilian Guava" (fruit).
<i>Melilotus officinalis</i>	
<i>cerulea</i> ...	... "The common Melilot" (fodder).
Olives of sorts	... "The blue Melilot" (fodder). (Oil, pickles, &c.)
<i>Opuntia Tuna</i> ...	... "The Cochineal Cactus."
<i>Pentzia virgata</i> ...	... (Fodder plant.)
<i>Psidium Cattleyanum</i> ...	... "The purple Guava" (fruit).
<i>Quillaya saponaria</i> ...	... "The Chilian Soap-bark" (detergent).
<i>Quercus suber</i> ...	... "The Cork Oak."
<i>serrata</i> ...	... "The Silkworm Oak."
<i>Rubia tinctoria</i> ...	... "The common Madder" (dye).
<i>Rhus eoriaria</i> ...	... "The tanning Sumach" (tanning and dyeing).
<i>cotinus</i> ...	... "The Venetian Sumach" (tanning).
<i>typhina</i> ...	... "The Virginian Sumach" (tanning).
<i>Salix (Osiers) of sorts</i> ...	... (Basket work.)
<i>Sansevieria zeylanica</i> ...	... (Fibre.)
<i>Thea bohea</i> , var. <i>Chinensis</i>	... "The Chinese Tea plant."
<i>Assamica</i> ...	... "The Assam Tea plant."

## LIST OF DONORS.

Acclimatisation Society, Melbourne (A. C. Le Souef, Esq.). Golden Pheasants for aviary.

Adelaide Botanic Gardens (Dr. Schomburgk, Director). Quantity of seeds and plants.

Agriculture, Department of, Melbourne (A. R. Wallis, Esq.). Valuable seeds.

Anderson, Colonel, South Yarra. Roller (wooden); also seeds and cuttings.

Archer, W. H., Hawthorn. Valuable plants and cuttings.

Ardlic, W., Warrnambool. Seeds and plants.

Baines, F., East Melbourne. Cuttings.

Baker, F., Brighton. Bulbs.

Balfour, Hon. J., Melbourne. Egyptian seeds.

Banks, T., South Yarra. Miscellaneous bulbs, &c., in quantities.

Barry, Sir Redmond, Philadelphia. Large collection valuable seeds.

Berry, G. R., South Yarra. Seeds and plants.

Biers, H., Melbourne. Indian seeds.

Bleasdale, Dr., D.D., Melbourne. Seeds.

Bowen, His Excellency Sir George, Melbourne. Valuable American and other seeds.

Boyd and Currie, Melbourne. Ferns; also large specimen plant.

Boyle, D., Nunawadiug. Botanical specimens (dried).

Bright, C., South Yarra. Miscellaneous plants.

Brisbane Acclimatisation Society (L. A. Bernays, Esq.). Valuable ferns, palms, &c., in quantities.

Brisbane Botanic Gardens (W. Hill, Esq., Director). Valuable ferns, palms, &c., in quantities.

Brown, Lindsay, Goorawadda, Murray River. Plants.

Bruce, A., South Yarra. Seeds.

Bunning, G., Nurseryman, St. Kilda. Valuable plants, &c., in quantities.

Bull, W., Plant Merchant, Chelsea, London. Choice seeds.

Cairns, His Excellency W. W., Queensland. Quantity of ferns.

Campbell, Miss C., Melbourne. Quantity cuttings.

Carter, W., Emerald Hill. Valuable plants.

Casey, Hon. J. J., St. Kilda. Valuable plants and seeds.

Castlemaine Botanic Gardens (P. Doran, Esq.). Choice plants of medicinal value.

Chicago Botanic Gardens (H. P. Babcock, Esq., Director). American seeds in quantities.

Chirnside, A., Werribee. Specimen plant; also seeds.

Christchurch Government Gardens (J. Armstrong, Esq.). New Zealand plants.

Colonial Secretary, West Australia. Valuable seeds in quantities.

Cooper, R., South Yarra. Seeds from Portugal.

Corbett, E., Cape Town, South Africa. Valuable seeds.

Cowan, Miss, Melbourne. Indian seeds.

Cox, Dr., Sydney. Seeds and plants.

Craft, C., Gippsland. Seeds.

Crofts, Miss L., Sandhurst. Seeds.

Curcier and Adet, Melbourne. Miscellaneous plants; also free freight on consignments.

Curl, S. M., M.D., Wellington, New Zealand. Seeds.

Dall, W., South Yarra. Seeds and plants.

Daly, W. J., Melbourne. Plants.

Douglass, A., Geelong. Quantity select bulbs.

Douglass, G., South Yarra. Specimen plant.

Duncan, W., Malvern. Valuable seeds.

Dunne, J., Mackay, Buller River, Queensland. Choice seeds.

Eaves, S. H., Brisbane, Queensland. Ferns and other plants.

Edwards, J., Melbourne. West Australian seeds.

Elkingtou, Professor J., M.A., University, Melbourne. Valuable seeds, bulbs, &c.

Exhibition Commissioners, Melbourne (G. C. Levey, Esq.). Ferns and other choice plants.

Fairfax, W., Warrnambool. Valuable seeds.

Farnsworth, J., Portsea. West Australian seeds and Victorian fern trees.

Ferguson, W., Macedon. Tree ferns and other plants in quantities.

Fitzroy Gardens (N. M. Bickford, Esq.). Plants and cuttings.

Fletcher, D., Sydney. Large and valuable palms.

Fletcher, A., Emerald Hill. Plants and seeds.

Ford, R. D., Melbourne. Seeds.

French, C., South Yarra. Native ferns, seeds, &c.

Geelong Botanic Gardens (J. Raddenberry, Esq., Curator). Valuable plants.

Gill, Edwin, South Yarra. Seeds and plants.

Glass, C. C., Melbourne. Canadian seeds.

Glen, C., Entally, Tasmania. Seeds in quantities.

Godber, C., Wellington, New Zealand. Seeds.

Goldie, A., Queensland. Cycas stems from New Guinea.

Goldstein, T. R. Y., Warrnambool. Ferns, cuttings, and valuable seeds.

Gordon, T. D., Customs, Melbourne. Valuable seeds and plants.

Graham, J., Nurseryman, Sydney. Select plants.

Greig, J., Toorak. Seeds and cuttings of choice plants.

Grieve, J., South Melbourne. Plants.

Groom, Mrs. F., Tasmania. Plants and seeds.

Grover, Mrs. J., Melbourne. Seeds.

Guilfoyle, J., Tweed River, New South Wales. Valuable seeds and plants in quantities.

Guilfoyle, M., Brisbane. Valuable plants.

Gull, Mrs. A. E., Guildford, West Australia. Valuable palms and seeds.

Hackett, J. W., M.A., Trinity College, Melbourne. Feru spores.

Halberstaedter, A., Mount Brewer, Queensland. Seeds, plants, &c., in quantities.

Hannecke, C. F., Raugetiki, New Zealand. Plants and seeds.

Harding, J., Mount Vernon, New Zealand. Seeds in quantities.

Harris, J., Nurseryman, South Yarra. Plants and cuttings.

Hartmann, C. H., Toowoomba, Queensland. Valuable seeds.

Henderson, Mrs. E., Emerald hill. Seeds and cuttings.

Henderson, J. A., Ballina, N.S.W. Seeds.  
Henderson, W., Sydney. Kangaroo; also valuable plants.  
Henty, E., St. Kilda. Plants and cuttings.  
Heyne, E. B., Seedsman, Adelaide. Valuable seeds and bulbs in quantities.  
Hider, F., Warrnambool. Specimen plant.  
Hobart Town Botanic Garden (F. Abbott, Esq., Director). Quantity of valuable plants, Sphagnum Moss, &c.  
Hodgkinson, Mrs. C., East Melbourne. Seeds.  
Hong Kong Botanic Garden (C. Ford., Esq, Director). Select plants and seeds.  
Horrell, C., Prahran. Plants from Java.  
Hossack, A. G., Fernshawe. Native grasses.  
Huber and Co., Hyeres, (Var) France. Valuable seeds.  
Innes, Hon. F., Tasmania. Valuable plants.  
Inwood, W., Oriental Bank, Melbourne. Seeds.  
Jarrett, W. H., South Yarra. Select plants.  
Jeffreys, J., Geelong. Select ferns, cuttings, &c.  
Johnson, B. and S., Nurserymen, Richmond. Miscellaneous plants in quantities.  
Kew Royal Botanic Gardens, London (Dr. J. D. Hooker, Director). Valuable and select plants (per favor T. D. Gordon, H.M.C., Melbourne); also choice seeds, &c., on many occasions.  
Kiluer, F., Rockhampton, Queensland. Valuable seeds in quantities.  
Lahore, Agri-Horticultural Society of. Indian seeds.  
Lang, T., and Co., Seed Merchants, Melbourne. Select bulbs, &c., in quantities.  
Law, Somner, and Co. Quantity bulbs.  
Le Jeunc, P., Fiji. Valuable collection plants and seeds from Fiji.  
Long, Sergeant A., South Yarra. Seeds.  
Lowe, R., South Yarra. Zamia seeds.  
Lucas, R., Colac. Large tree fern and other miscellaneous ferns, dried specimens, &c.  
Mansfield, J., Porepunkah, Victoria. Native plants.  
McCulloch, Lady, St. Kilda. Valuable plants.  
McDermott, F. S., Newcastle, N.S.W. Valuable palms.  
McDonald, M., Melbourne. Miscellaneous plants.  
McDonald, A. C., South Yarra. Quantity ferns.  
Merrett, S. H., Malvern. Quantity seedlings.  
Miller, F. B., Kew, Melbourne. Valuable seeds.  
Miller, G. G., Moyston. Seedlings and seeds of native plants in quantities.  
Miller, Hon. H. (per his gardener, H. Boyce), Kew, Melbourne. Several large and valuable specimen plants.  
Miller and Sievers, Seed Merchants, San Francisco. Miscellaneous and select seeds in quantities.  
Mitchell, R. S., Ballarat. Seeds of medicinal plants, &c.  
Marris, E., Milan, Italy. Valuable seeds.  
Mueller, Baron von., Government Botanist, Melbourne. Valuable seeds.  
Murray, W., Melbourne. Plants.  
Natal Botanic Garden (W. Keit, Esq., Director). South African seeds and plants.  
Nernst, J., Port Mackay, Queensland. Quantity of seeds.

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